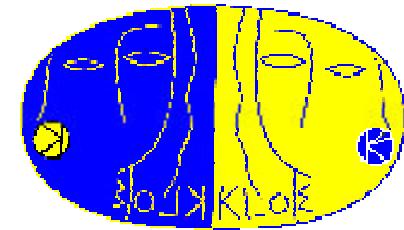


ROOT 2001

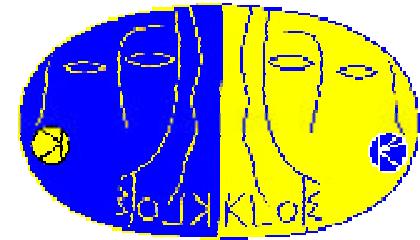
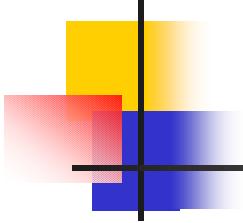


Use of the ROOT framework in the KLOE experiment

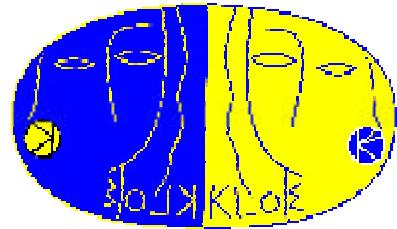
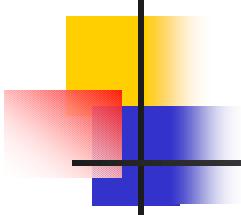
Wen Mei *

For the KLOE Collaboration 1

*Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy.



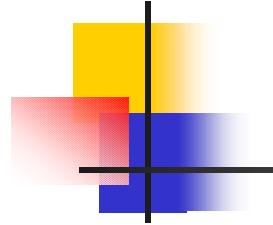
- Histogram Monitoring System
 - Kserver and Kbrowser
- General status presenter
 - KGeneral



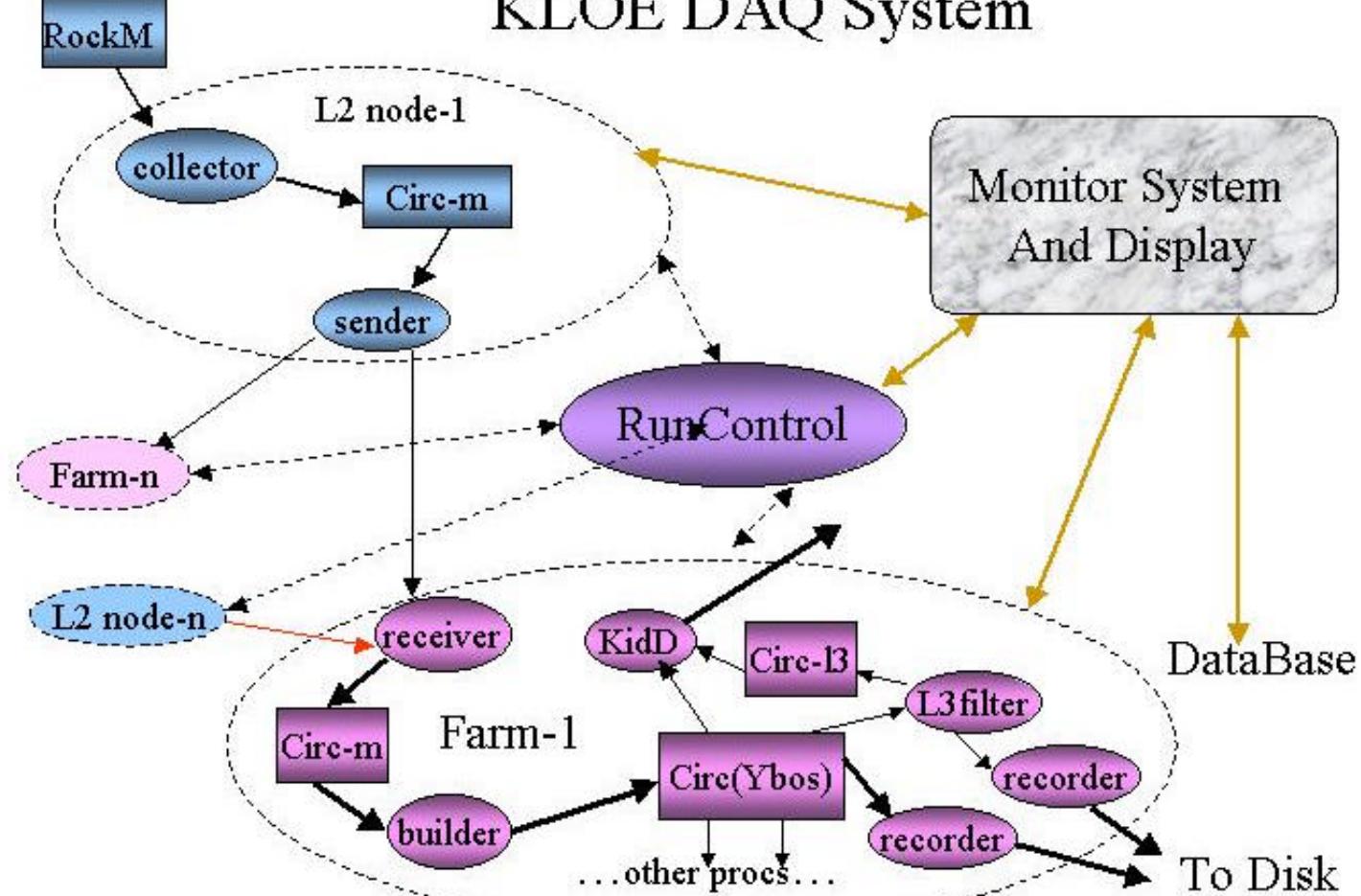
1. KLOE Online Data Acquisition System

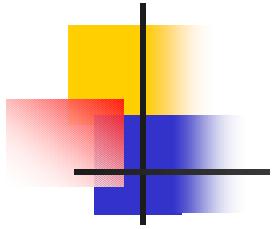
2. KLOE Monitoring System

- 1) Histogram monitoring system*
- 2) General status presenter*
- 3) Other tools*

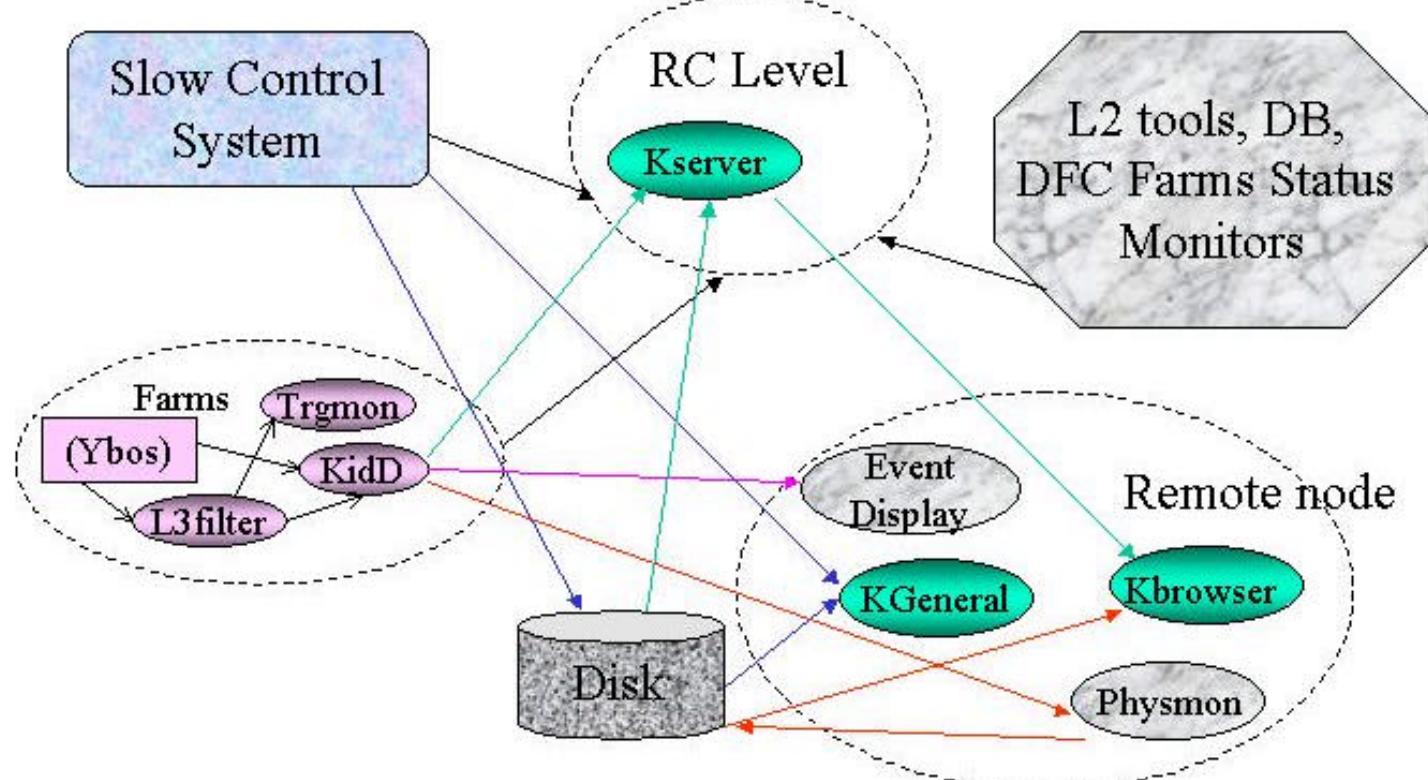


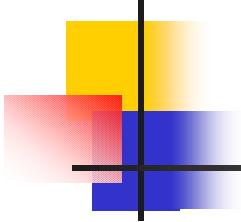
KLOE DAQ System



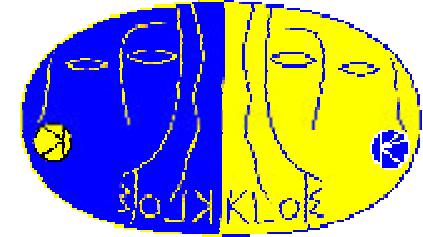


KLOE Monitoring System



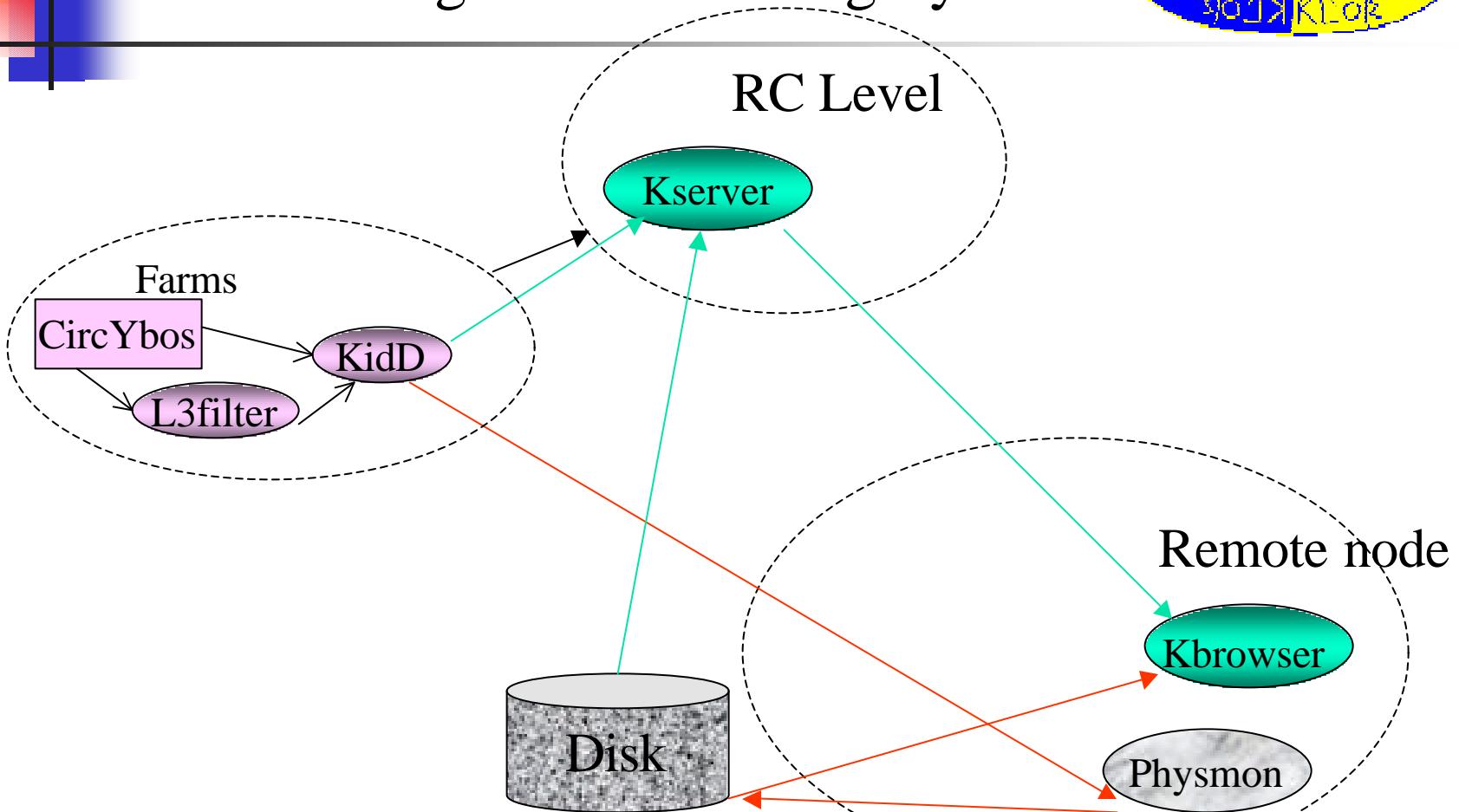
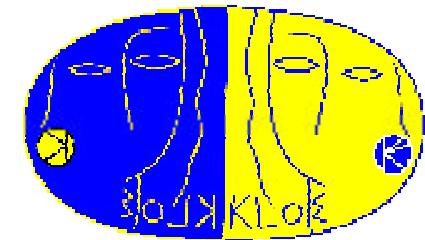


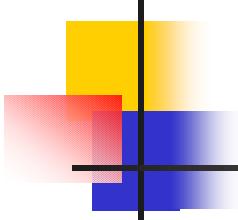
3. Histogram Monitoring System



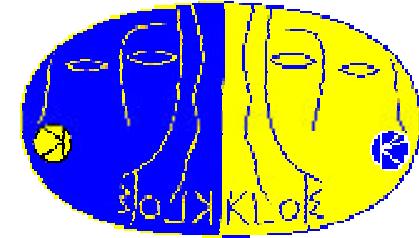
- Client_server system Kserver & Kbrowser.
- C++, IBM AIX V4.3, HP-UX V10.2 and OSF1 V4.0
- ROOT V2.23, 40+ classes for histogram creation, file access, network communication and GUI management

KLOE Histogram Monitoring System

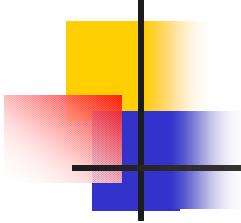




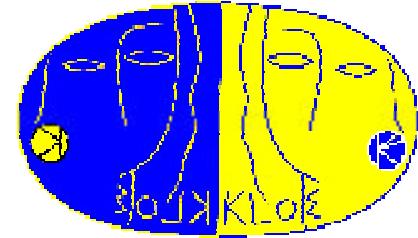
Kserver



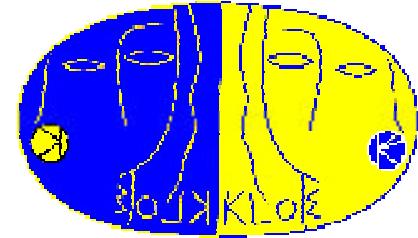
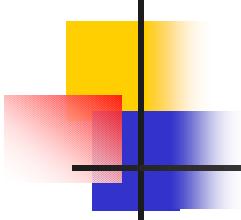
- Kserver: Create histograms from online Kid and offline raw files.
- Tree of thousands histograms
 - ECal, QCal, Drift Chamber, Trigger, FEE
- actions
 - Establish connection with client.
 - Fill, send, reset histograms
 - Save ROOT file



Kbrowser

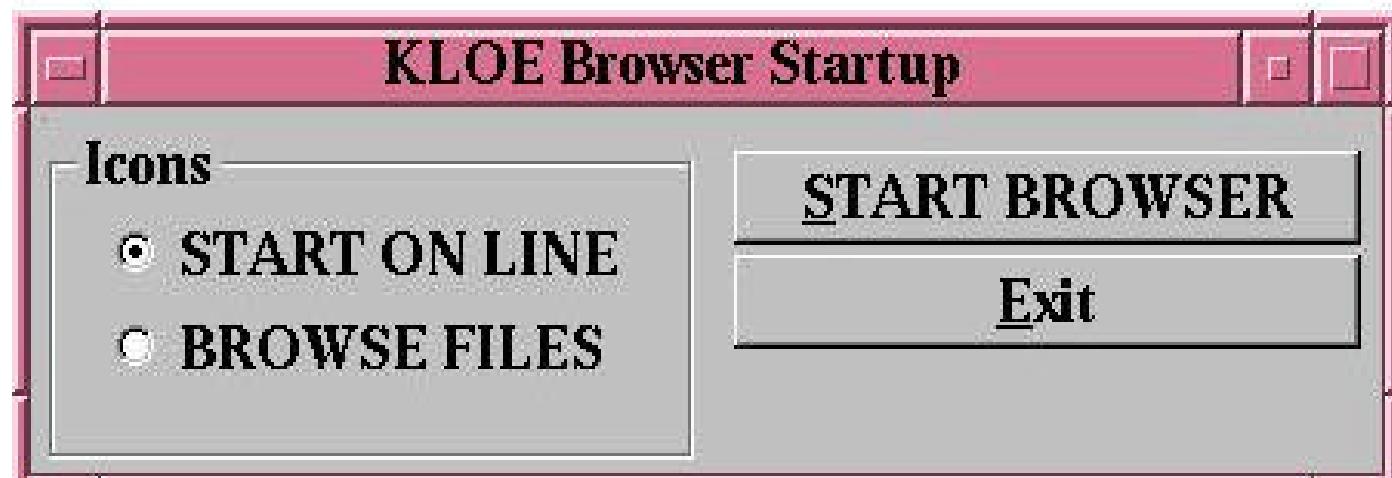
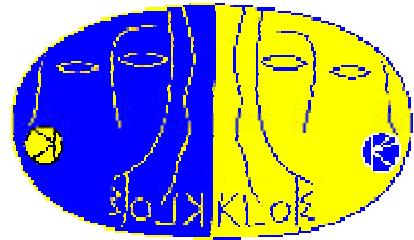
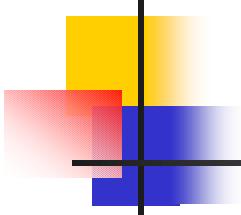


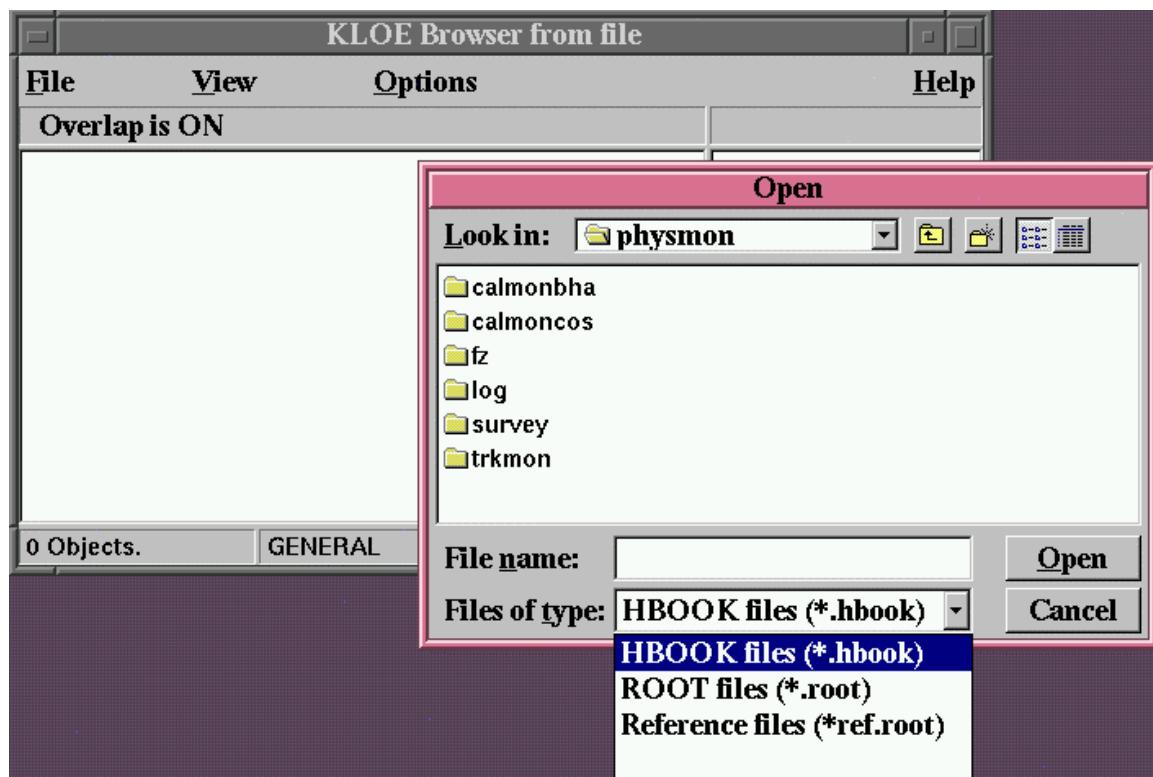
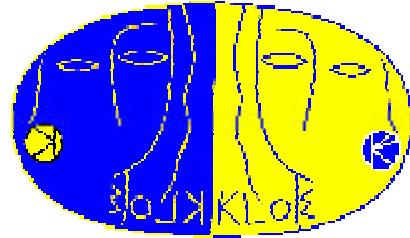
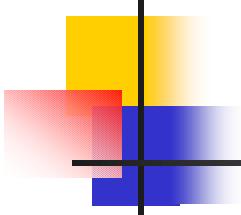
- Browse histograms from Kserver or ROOT/HBOOK files
- Display histograms with/without references
- Draw histograms in single pad mode or together

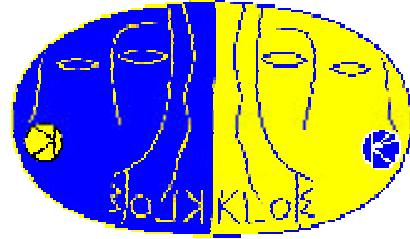
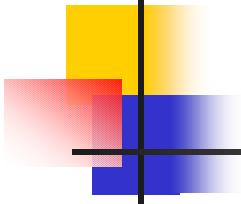


4. An Example of the Use of the KLOE Histogram Monitoring System

- Start_kserver
- Start_kbrowser
 - Browse icons
 - Display histograms







KLOE Browser from file

File View Options Help

RefFile = "trkmonref.root"

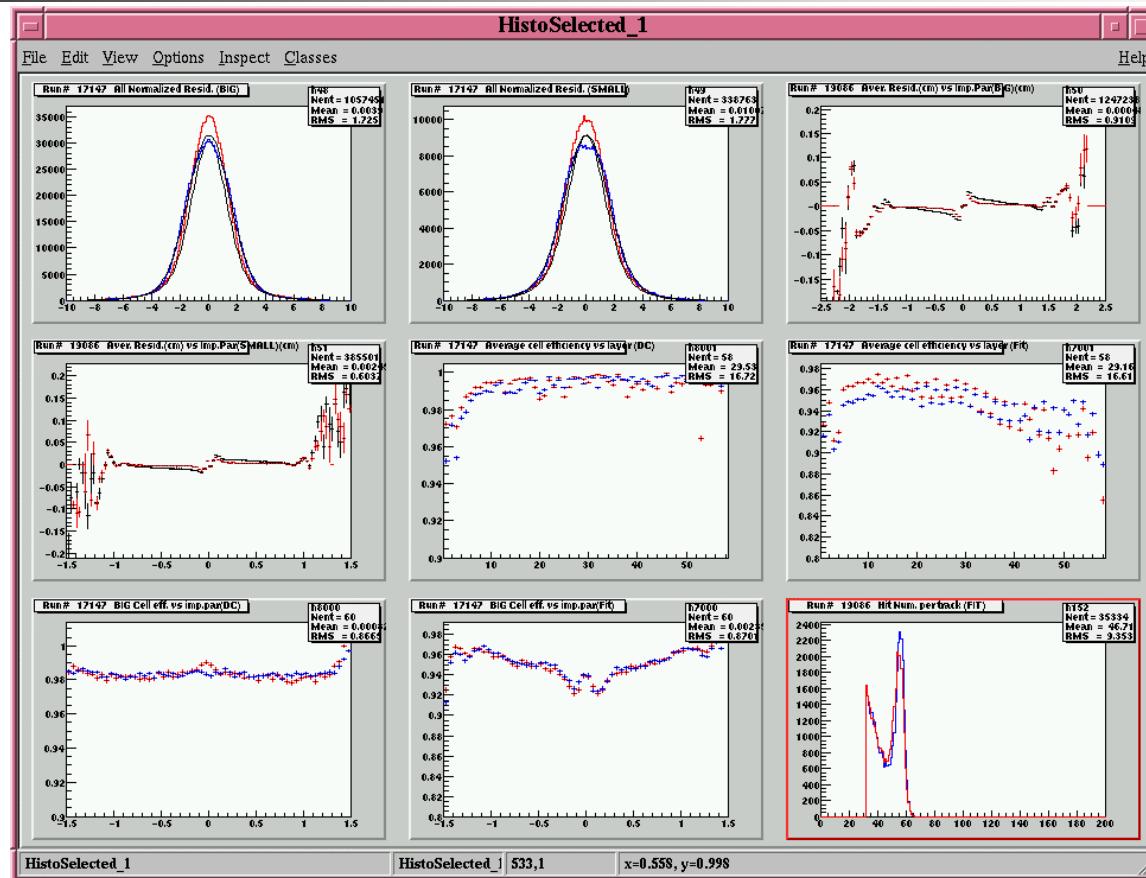
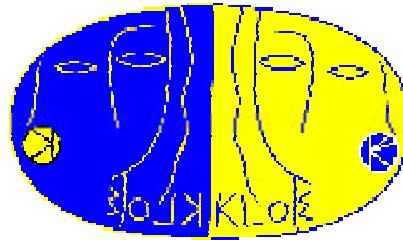
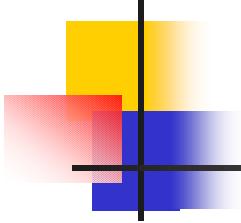
Contents of "/runcond/root/physmon/trkmon/trkmon_019086.root/FORSHIFTERS"

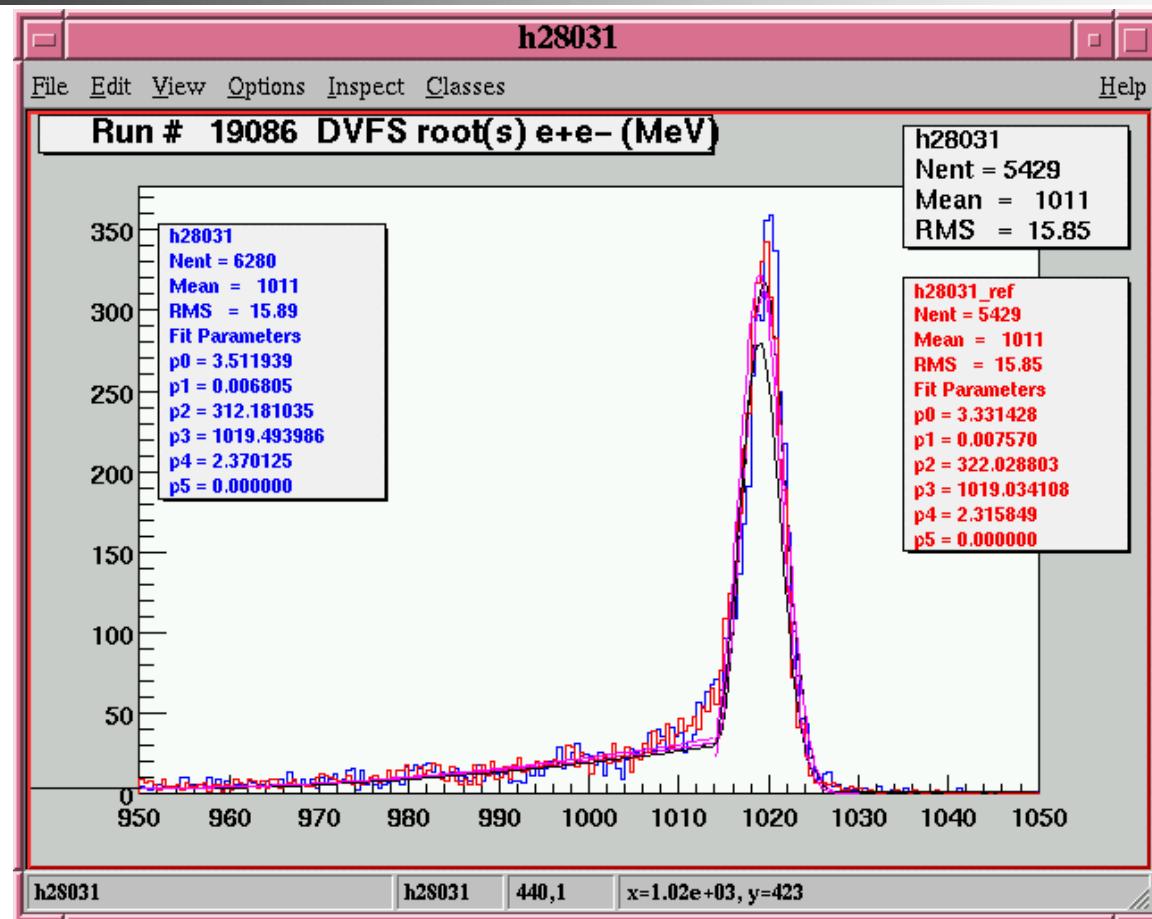
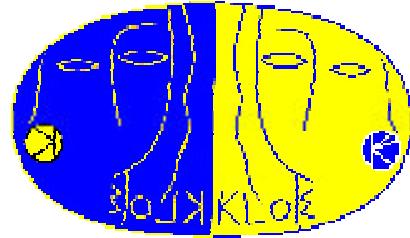
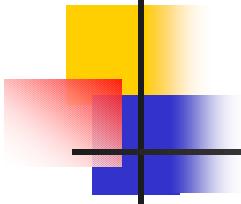
/runcond/root/physmon/trkmon/trkmon_019086.root

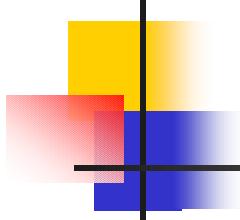
- GLOBAL
- FORSHIFTERS**
- DPHI
- DCEFFIC
- FITEFFIC

Run # 19086 All Normalized Resid. (BIG) ;1
Run # 19086 All Normalized Resid. (SMALL) ;1
Run # 19086 Aver. Resid.(cm) vs Imp.Par(BIG)(cm);1
Run # 19086 Aver. Resid.(cm) vs Imp.Par(SMALL)(cm) ;1
Run # 19086 Average cell efficiency vs layer (DC) ;1
Run # 19086 Average cell efficiency vs layer (Fit) ;1
Run # 19086 BIG Cell eff. vs imp.par(DC);1
Run # 19086 BIG Cell eff. vs imp.par(Fit) ;1
Run # 19086 Hit Num. per track (FIT);1
Run # 19086 SMALL Cell eff. vs imp.par(DC) ;1
Run # 19086 SMALL Cell eff. vs imp.par(Fit) ;1
Run # 19086 Tot Hit Num.FIT/Total Hit Num.DC (per ev) ;1
Run # 19086 Track param. norm. chi2 ;1

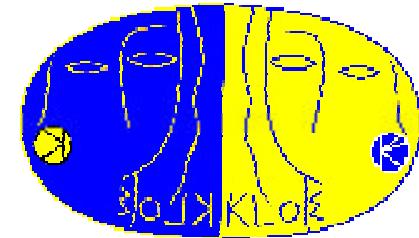
20 Objects, 9 selected. Run # 19086 Tot Hit Num.FIT/Total Hit Num.DC (per ev)





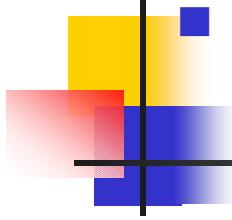


5. KGeneral

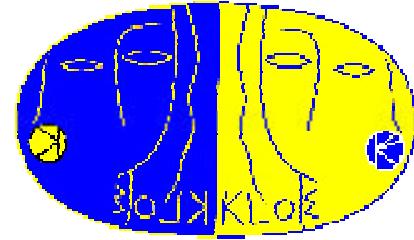


KLOE and DANE General
Status Presenter

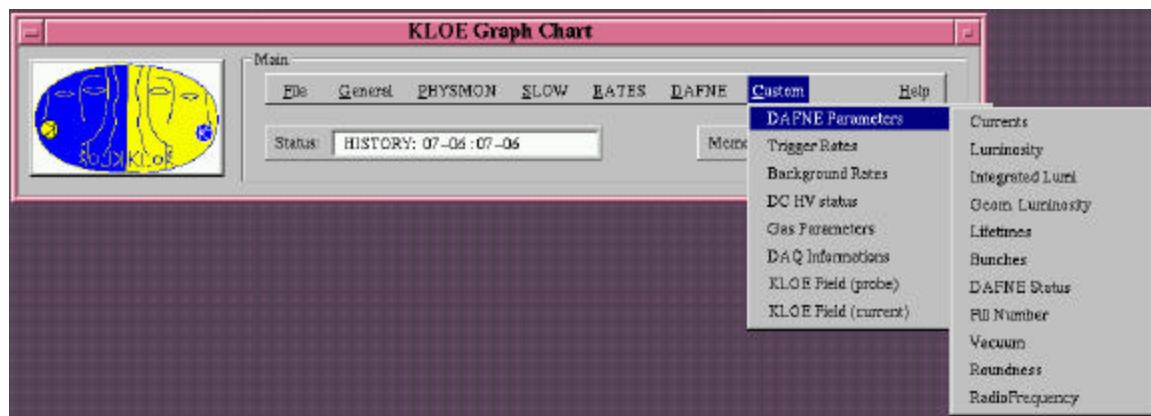
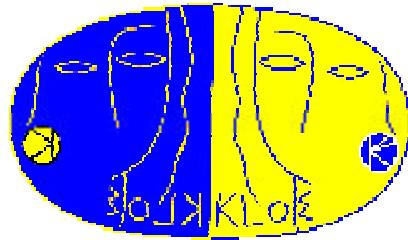
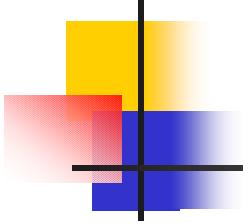
- Main program is KGeneral
 - Using C++, ROOT v2.23 analysis environment

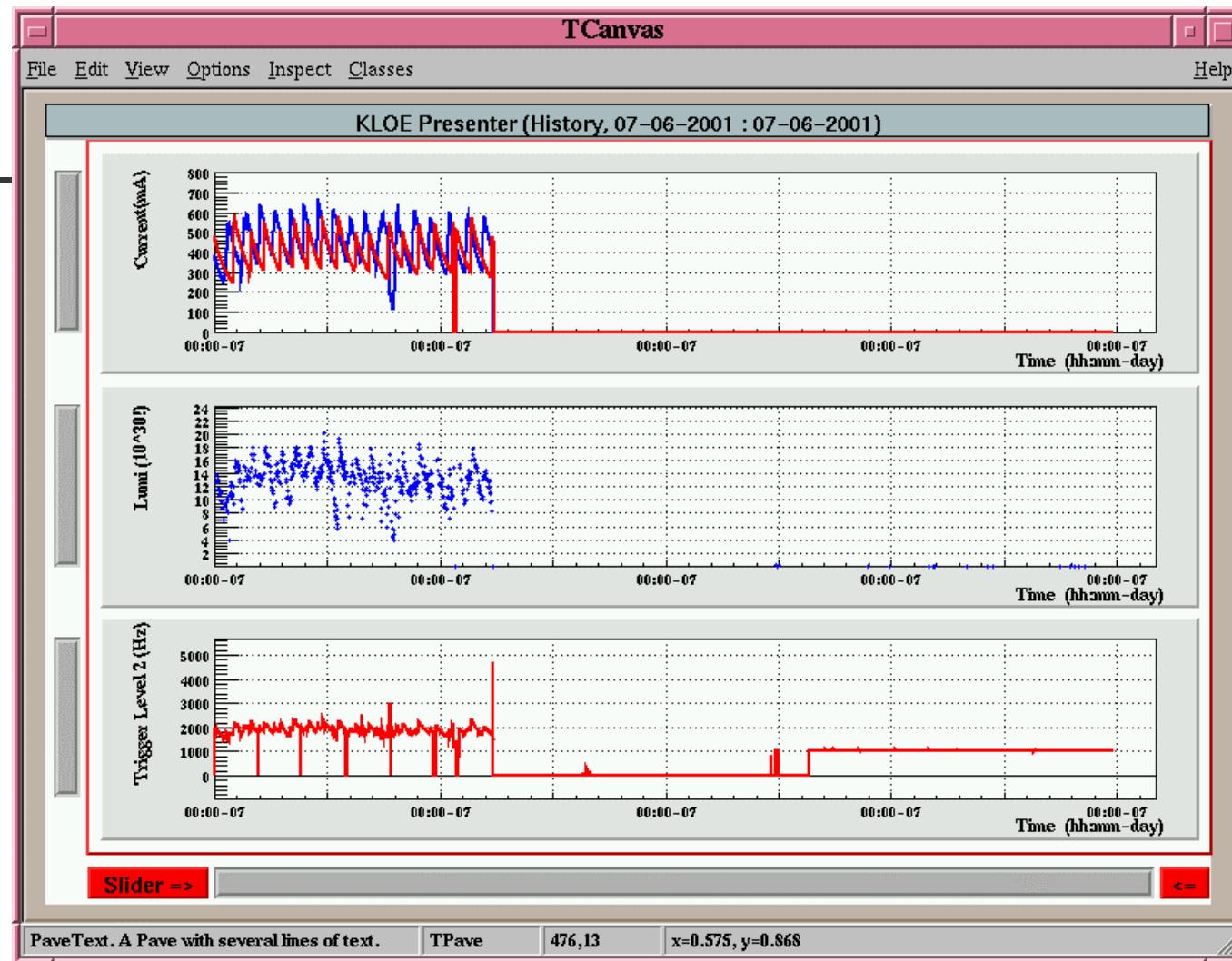


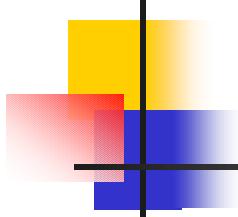
- The main functions of the KGeneral program are:



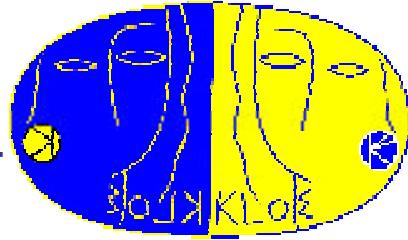
- to read the appropriate data files and to create an ntuple structure
- to create different time charts of the monitored parameters
- to handle the user interface for plot requests
- to display of the user requested plots







6. Problems related with ROOT



- ① HBOOK to ROOT conversion lose message of fitted parameters
- ② Hard to follow up the frequently updated ROOT version